

CLAIMS AMENDMENTS

1. (currently amended) A device for disinfecting a handle of a door comprising:

- a) a housing adapted to be mounted on the door,
- b) a source of electrical energy operative to supply power to the device,
- c) a vessel in the housing, adapted to contain a liquid comprising soap or disinfectant material,
- d) a handle operation sensor in the housing effective to detect ~~whether~~ whether the handle is in current operation by a human hand,
- e) a nozzle adapted to form an aerosol of the liquid and a spray of the aerosol onto said door handle,
- f) an electrically powered pump in the housing and being operative to pump the liquid from the vessel to the nozzle, ~~and~~
- g) a controller effective to activate and deactivate the pump, and
- h) an alarm perceptible by a human,

in which the controller is configured to energize the alarm during a preselected lead-time immediately prior to each activation of the pump.

2. (original) The device of claim 1 in which the nozzle is adjustable to form the spray in a range of directions relative to the housing.

3. (original) The device of claim 2 further comprising a lock adapted to fix the direction of the spray.

4. (original) The device of claim 1 which comprises a plurality of nozzles outside the housing and positioned to

provide a plurality of sprays directed toward the handle from different directions.

5. (currently amended) ~~The device of claim 4~~ A device for disinfecting a handle of a door comprising:

- a) a housing adapted to be mounted on the door,
- b) a source of electrical energy operative to supply power to the device,
- c) a vessel in the housing, adapted to contain a liquid comprising soap or disinfectant material,
- d) a handle operation sensor in the housing effective to detect whether the handle is in current operation by a human hand,
- e) a plurality of nozzles outside the housing adapted to form an aerosol of the liquid and positioned to provide a plurality of sprays onto the handle from different directions,
- f) an electrically powered pump in the housing and being operative to pump the liquid from the vessel to the nozzles, and
- g) a controller effective to activate and deactivate the pump,

in which the nozzles are on a hollow manifold mounted on the door circumferentially around the handle, the manifold having a bore operative to conduct the liquid to the nozzles, and which device further comprises a tube in fluid communication between the pump and the bore.

6. (currently amended) ~~The device if~~ device of claim 5 in which the manifold has a ring shape.

7. (original) The device of claim 1 wherein the handle operation sensor is a photoelectric cell.

8. (original) The device of claim 1 wherein the source of electrical energy is a battery.

9. (original) The device of claim 1 in which the handle operation sensor is adapted to generate a handle operation signal for use by the controller.

10. (original) The device of claim 9 in which the controller comprises a program configured to utilize the handle operation signal to prevent activation of the pump when the handle is in operation by a hand.

11. (original) The device of claim 9 in which the handle operation signal indicates that the handle is not currently in operation by a hand and in which the controller comprises a handle-in-use triggered delay which is operative to postpone activation of the pump until immediately after a preselected elapsed time following generation of the handle operation signal.

12. (currently amended) ~~The device of claim 1 further comprising~~ A device for disinfecting a handle of a door comprising:

- a) a housing adapted to be mounted on the door,
- b) a source of electrical energy operative to supply power to the device,
- c) a vessel in the housing, adapted to contain a liquid comprising soap or disinfectant material,

d) a handle operation sensor in the housing effective to detect whether the handle is in current operation by a human hand,

e) a nozzle adapted to form an aerosol of the liquid and a spray of the aerosol onto said door handle,

f) an electrically powered pump in the housing and being operative to pump the liquid from the vessel to the nozzle,

g) a controller effective to activate and deactivate the pump, and

h) a proximity sensor directed outward from the door and being adapted to provide a proximity signal indicative that a person is located within a predefined distance of the door.

13. (original) The device of claim 12 in which the controller is operative to prevent activation of the pump while a person is detected to be currently within the predefined distance.

14. (original) The device of claim 1 in which the controller comprises a maintenance spray program configured to activate the pump at expiration of a preset amount of time after a most recent previous spray.

15. (canceled)

16. (currently amended) A method of disinfecting a handle of a door comprising the steps of:

(I) providing a device comprising a) a vessel containing a liquid comprising soap or disinfectant material, b) a handle operation sensor effective to detect whether a human hand is currently operating the handle, c) a nozzle adapted to form

an aerosol of the liquid, and d) a controller effective to start and stop flow through the nozzle,

(II) continuously scanning the handle by the handle operation sensor,

(III) transmitting to the controller a handle-in-use signal while the sensor detects that the handle is currently being manipulated by a human hand and a handle-clear signal while the sensor detects that the handle is currently not being manipulated by a hand,

(IV) spraying the aerosol from the nozzle onto the door handle for a preselected duration after each time that the controller first receives a handle-clear signal, and

(V) stopping the spraying at all times that the controller receives a handle-in-use signal, and

(VI) providing a human perceptible alarm for a preselected lead-time immediately prior to commencing the spraying.

17. (original) The method of claim 16 in which includes postponing of the spraying for a preselected handle-in-use triggered delay.

18. (currently amended) ~~The method of claim 16~~ A method of disinfecting a handle of a door comprising the steps of:

(I) providing a device comprising a) a vessel containing a liquid comprising soap or disinfectant material, b) a handle operation sensor effective to detect whether a human hand is currently operating the handle, c) a nozzle adapted to form an aerosol of the liquid, and d) a controller effective to start and stop flow through the nozzle,

(II) continuously scanning the handle by the handle operation sensor,

(III) transmitting to the controller a handle-in-use signal while the sensor detects that the handle is currently being manipulated by a human hand and a handle-clear signal while the sensor detects that the handle is currently not being manipulated by a hand,

(IV) spraying the aerosol from the nozzle onto the door handle for a preselected duration after each time that the controller first receives a handle-clear signal, and

(V) stopping the spraying at all times that the controller receives a handle-in-use signal,

in which the device further comprises a proximity sensor directed outward from the door, and in which the method further comprises continuously scanning with the proximity sensor a space within a predefined distance from the door, detecting whether a person is currently within the space and preventing the spraying while the person is currently within the space.

19. (original) The method of claim 16 which further comprises the step of controlling the device to spray at expiration of a preset amount of time after most recent spraying has occurred.

20. (canceled)